875—62.18(88A) Operations.

62.18(1) *Location.* The general layouts shall be established such that continuous traffic patterns will exist. Box canyons formed by rides, devices and concession booths shall be avoided. The egress of a ride, device or booth shall not be located immediately in front of hazardous equipment. The layouts shall be such to prevent traffic patterns through the concession booth backyards and shall minimize traffic over any water lines and electrical lines. The intermingling of water lines and electrical lines shall be avoided. Long guy wires or narrow braces utilized for ride, device or booth support shall be clearly marked with streamers or other devices to attract attention when located in traffic patterns.

a. Temporary ride. A ride shall be placed on solid footings, be secured to prevent shifting, tipping, swaying or erratic motion. No cement, brick or similar type blocks shall be permitted. The provision pertinent to erratic motion or sway does not apply to a ride designed to permit flotation characteristics or flexibility. Use of shim blocks shall be kept to a minimum. Depressions in the ground near the ride footings shall be filled and tamped and adequate means of drainage provided to prevent water from collecting and softening supporting areas in case of rain. The area surrounding the ride shall be clear and kept free from trash and tripping hazards. A daily inspection of the ride motion and footings shall be made.

b. Permanent ride. A ride permanently erected in an amusement park shall be set on properly designed and constructed foundations or footings and secured to these footings in a manner to prevent shifting, tipping, swaying or erratic motion. Cement, brick or similar type blocks shall not be permitted. The provision pertinent to erratic motion or sway does not apply to a ride designed to permit flotation characteristics or flexibility. Use of wood shim blocks shall be kept to a minimum.

c. Public protection. Temporary booths shall not be located under aerial amusement devices. Temporary booths utilized for cooking food shall be located such that at least 10 feet of clearance exists on two sides for the use of fire equipment or other emergency vehicles, and shall not be located within 10 feet of amusement rides. A minimum clearance of 6 feet shall exist between an exterior ride and walls, building and other structures. At least 12 feet of clearance shall be maintained between rides.

Except where electrical distribution and transmission lines have been de-energized and visibly grounded at point of work, operation or where insulating barriers, not a part of or attachment to the equipment, ride structure or machinery, have been erected to prevent physical contact with the lines, equipment, ride or machines shall be operated proximate to power lines only in accordance with the following:

(1) For lines rated 50 kv or below, minimum clearance between the lines and any part of a lifting crane, ride structure or equipment shall be 10 feet.

(2) For lines rated over 50 kv, minimum clearance between the lines and the lifting crane, ride, structure or equipment shall be 10 feet plus 0.4 inches for each 1 kv over 50 kv.

(3) During assembly or disassembly a person shall be designated to observe clearance of the equipment and give timely warning for all maneuvers where it is difficult to maintain the desired clearance by visual means.

The operator shall ensure that there exists in the immediate vicinity a device or devices (for example, ladder, fire truck or hydraulic chair lift) which are available for emergency removal of passengers from elevated amusement rides or amusement devices that will not operate.

62.18(2) *Leveling and alignment.* Corner posts, central columns or support structures of a ride designed to operate on a perpendicular axis shall be plumb and secured so that the path of the sweeps or platforms shall be level and operate on a true horizontal plane at right angles to the axis of the pivot. A ride whose carriers are designed to operate on a horizontal axis shall be leveled so that the carriers will orbit in a true perpendicular plane. The base of a ride employing a combination of orbiting planes or a ride whose carriers operate normally in a plane other than true horizontal or vertical shall be leveled and plumbed and secured so that they will not tip or shift and will be stable under the most adverse operating conditions, except for a ride designed to permit flotation characteristics or flexibility or designed to operate properly whether the base is plumb or level or not.

62.18(3) *Ride operators.* A ride or device shall be operated by a competent ride operator trained for the duty. The ride operator of a kiddie ride or device designed for the exclusive use of children shall be

at least 16 years of age. For all other major rides or devices an operator shall be at least 18 years of age. A ride operator shall have knowledge of the use and function of all normal operating controls, signal systems and safety devices applicable to the ride or device and of the proper use, function, capacity and speed of the particular ride or device which the operator is operating. A ride operator shall have complete control of the ride or device at all times that it is being operated for the public's use. When the ride or device is shut down provision shall be made to prevent operation by the public. No person other than a trained ride operator shall be permitted to handle the controls of a ride or device during normal operation except where it is designed to be controlled by the passenger.

62.18(4) *Overspeeding and overloading.* A ride or device shall not be loaded beyond its rated capacity nor shall it be operated at an unsafe speed or at any speed other than that prescribed by the design engineer or manufacturer. When this information is not obtainable, the criteria for safe operating speeds and rated capacity will be established by the commissioner.

62.18(5) *Internal combustion power sources.* Fuel tanks for internal combustion power sources should be of adequate capacity to permit uninterrupted operation during normal operating hours. Where it is impossible to provide tanks of proper capacity for a complete day, the ride or device shall be shut down and unloaded or evacuated during the refueling procedure. The fuel supply shall not be replenished while the engines are running. An enclosed area in which an internal combustion engine is operated shall be ventilated. Exhaust fumes from the engine shall be discharged outside the area. Internal combustion power sources shall be located in a manner and shall be protected either by guards, fencing or enclosure to prevent public exposure to hazard and to secure the equipment from the public.

62.18(6) *Maintenance.*

a. General. All equipment relative to amusement rides, amusement devices and concession booths shall be given periodic maintenance service. This shall include properly lubricating and cleaning machinery, engines and motors. Worn mechanical parts, padding material and cushioning shall be replaced and kept in a safe condition, and machinery shall be periodically inspected for loose fasteners. Lockout devices shall be engaged prior to inspecting or servicing a piece of equipment. The upholstery shall be examined, and no loose or flapping portions of upholstery or decoration shall be permitted. Equipment and structure for amusement rides, amusement devices and concession booths shall be kept free from protruding nails, loose nails, splintered wood, loose and wobbly seats and rough, loose or dangerous armrests.

b. Wire rope.

(1) Wire rope shall be thoroughly examined. Wire rope found to be damaged shall be replaced with new rope of proper design and capacity. Any of the following conditions shall be cause for rope replacement:

In running ropes, six randomly distributed broken wires in one rope lay, or three broken wires in one strand in one rope lay. A rope lay is the length along the rope in which one strand makes a complete revolution around the rope.

In pendants or standing ropes, (ropes bearing the entire load and subjected to constant pressure and surge shocks) evidence of more than one broken wire in one rope lay.

Abrasion, scrubbing or peening causing loss of more than one-third of the original diameter of the outside wires.

Severe corrosion.

Severe kinking, severe crushing, or other damage resulting in distortion of the rope structure.

Heat damage resulting from a torch or arc caused by contact with electrical wires.

Reduction from normal diameter of more than 3/64 inch for diameters up to and including ¾ inch; 1/16 inch for diameters 7/8 inch to 1-1/8 inches; 3/32 inch for diameters 1¼ inches to 1½ inches. Marked reduction in diameter indicates deterioration of the core resulting in lack of proper support for the load carrying strands.

Bird caging or other distortion resulting in some members of the rope structure carrying more load than others.

Noticeable rusting or development of broken wires in the vicinity of attachments. If this condition is localized in an operating rope, the section in question can be eliminated by making a new attachment. This may be done rather than replacing the entire rope.

(2) Wire ropes used to support, suspend, bear or control forces and weights involved in the movement and utilization of tubs, cars, chairs, seats, gondolas, other carriers, the sweeps or other supporting members of a ride or device shall not be lengthened or repaired by splicing.

(3) Couplings, sockets and fittings shall be of a design and type approved by the commissioner and installed in accordance with the instructions or specifications of the designer, engineer or manufacturer.

c. Wood components. Footings, splices, uprights, track timbers, ledgers, sills, laps, bracing, flooring and all other wood components of rides, devices and structures shall be inspected for deterioration, cracks or fractures. Emphasis shall be given to ensuring tight nails, bolts, lag bolts and other fasteners. A minimum of 18 inches of soil, with respect to grade, shall be removed around piling or wood members embedded in dirt for support to check deterioration. When wood piling requires replacement, ground level concrete piers shall be used. Wood members found to be defective shall be replaced with material of equal or greater strength and capacity. Repairs and replacements to fixed roller coasters shall be made in accordance with the recommendations of the manufacturer.

d. Housekeeping. An adequate number of containers for refuse shall be provided in and around all amusement rides and devices, permanent structures and temporary structures. Excessive accumulations of trash and refuse shall be promptly removed. All parts of amusement rides and devices, temporary structures and permanent structures used by the public shall be maintained in a clean condition. All walkways between amusement rides and devices shall be kept free from debris, obstructions or other hazards.

e. Electric motors. Electric motors exposed to water shall be given a dielectric test at least annually to ensure a safe operation and the results are to be kept with the carnival or in the amusement park.

f. Wire rope rollers, drums and sheaves. The mechanical devices that brake, control or come in contact with wire rope, such as rollers, drums and sheaves shall be examined on a periodic basis to ensure cleanliness and safe condition. Mechanical devices with broken chips, undue roughness or uneven wear shall be replaced immediately.

g. Articulations and bearings. The articulating pinions, frames, sweeps, eccentrics and other mechanical members shall be inspected for wear, out of round, cracks and other signs of deterioration, and shall be kept in good repair. Bearing surfaces, ball joints and other single or multiple direction mechanical surfaces shall be kept well lubricated, clean and inspected for out of round or out of spherical and shall be kept in good repair. Gear alignment and gear drives shall be kept in good repair.

h. Electrical wiring. Motor wiring, general service circuitry, decorative wiring, festoon wiring and concession stand wiring shall be inspected for insulation wear, fraying or other signs of deterioration such as cracking. Secure tape repairs may be used; however, use of tape repairs shall be kept to a minimum. Wire clips on articulating devices shall be kept in good repair, and wires at elbows and at the end of articulating devices shall be emphasized during inspections.

i. Safety devices. Retaining, restraining and containing devices shall be inspected to ensure they can continuously fulfill their function. Worn and damaged areas shall be repaired immediately or shall be cause for immediate replacement.

j. Hydraulic systems. The system is to be checked for leaks, damaged pipes and worn or deteriorated hoses.

k. Relief devices. Pressure relief valves or devices shall be exercised on a periodic basis to ensure that they operate properly. This includes compressed air and gas devices.